

4. ALTERNATIVES SUBMITTED TO THE CORPS FOR CONSIDERATION

4.1 INTRODUCTION

In 1998 the Corps prepared and circulated a Preliminary Revised Draft Environmental Impact Statement (PRDEIS). The PRDEIS had no legal status under the National Environmental Policy Act (NEPA). Rather, the PRDEIS was an extra effort undertaken by the Corps and was intended to foster basin education and consensus regarding a revised flow management plan. The PRDEIS presented eight representative alternatives with varied operational criteria. The eight alternatives were designed to illustrate what the “trade-offs” to resources and uses would be if operational criteria were varied.

Following educational workshops throughout both the Missouri and Mississippi River basins, the Tribes and basin interests, working with various groups and individual citizens, were requested to submit their consensus flow management plans to the Corps for analysis and consideration. As a component of the Corps’ Government-to-Government consultation with basin Tribes, at the request of the Mni Sose Intertribal Water Rights Coalition, the Corps funded and provided technical assistance to a technical committee established by the Mni Sose Intertribal Water Rights Coalition to develop a Tribal alternative.

This chapter describes the process following circulation of the PRDEIS and features of the alternatives that were submitted to the Corps by the Mni Sose Intertribal Water Rights Coalition and other basin interests. As the Corps reviewed the alternatives submitted, it became apparent that some features of the alternatives submitted do not relate directly to the operational criteria presented in the PRDEIS or directly to the operation of the Mainstem Reservoir System, which is the subject of this RDEIS. Nonetheless, the Tribes, basin interests, and the Corps view these issues as important. This chapter, therefore, also discusses a variety of Missouri River issues and how they might be related to the operation of the Mainstem Reservoir System. This discussion is intended to help the Tribes and other stakeholders better understand the Corps’ position regarding how the issues fit into the context of the RDEIS.

Following completion and initial distribution of the PRDEIS and associated new or revised supporting technical reports in August 1998, the Corps began efforts to educate the basin Tribes and the public on the tradeoffs associated with changes in the operating criteria included in the eight representative alternatives. Northwestern Division (NWD) staff held four meetings

for invited Congressional field office staff and local media in Omaha, St. Joseph, Kansas City, and Bismarck in the first month following the distribution. A series of 15 workshops was then held over the subsequent 4 months. Numerous Corps staff were available at the workshops to clarify the information provided in a video, on an interactive CD, on poster boards, and in handouts. A total of approximately 1,200 persons attended the workshops held from as far upstream on the Missouri River as Glasgow, Montana, to as far downstream on the Mississippi River as New Orleans, Louisiana. Two of the workshops were Tribal workshops, and they were held on the Fort Berthold and Lower Brule Reservations.

Following the workshops, the Corps initiated formal Government-to-Government consultation with the 30 basin Tribes. In February 1999, a facilitated Tribal Summit was held in Rapid City, South Dakota, to initiate that consultation. The Government-to-Government consultation history, process, and record to date are included as Appendix A of this document.

In addition to Tribal consultation, the Corps continued to provide guidance to basin entities developing consensus. Basin entities were urged to ensure diverse stakeholder participation in the development of alternatives so that interests throughout the basin would broadly support their plans. The Corps also provided extensive technical support during this period. At the request of basin interests, the Corps modeled countless scenarios with varied operating criteria. Results of all modeling were shared openly with all basin interests. Two time extensions for submittal of alternatives were requested by basin interests and granted. The period for submittal of alternatives was finally closed in November 1999.

The Corps received proposals from six entities. These entities were the Missouri Levee and Drainage District Association (MLDDA), the Missouri River Basin Association (MRBA), American Rivers, the Missouri River Natural Resources Committee (MRNRC), the Mni Sose Intertribal Water Rights Coalition, and the Missouri Department of Conservation (MODC). After extensive review of the submitted alternatives, the NWD proposed a preferred alternative (PA) in January 2000 that it believed

had broad basin support and complied with the Endangered Species Act (ESA). In March 2000, the U.S. Fish and Wildlife Service (USFWS) informed the NWD that the NWD PA would likely jeopardize the continued existence of Missouri River species protected under ESA. Subsequently, the Corps initiated formal consultation in April 2000 with the USFWS under Section 7 of the ESA. The scope of the ESA consultation encompassed the Corps' current Water Control Plan (CWCP) for operation of the Mainstem Reservoir System, the Bank Stabilization and Navigation Project (BSNP) on the lower 735 miles of the Missouri River, and the Kansas River projects. Releases from three of the Kansas River reservoirs (Milford, Perry, and Tuttle Creek Lakes) are used to support navigation on the Missouri River beginning at Kansas City to the mouth. In July 2000, the Corps received a Draft Biological Opinion (BiOp) from the USFWS. The Corps issued a press release, posted the Draft BiOp on its website, made the Draft BiOp available to the public upon request, and opened a 2-month comment period on the Draft BiOp, which extended until October 10, 2000. The Tribes and public were encouraged to provide biological information and comment relative to the Draft BiOp. Biological input received during the comment period was provided to the USFWS for its review and consideration in the preparation of the final BiOp. All biological and nonbiological comments received by the Corps since the publication of the PRDEIS have been retained by the Corps and will be considered in this NEPA review.

In November 2000, the Corps received a final BiOp from the USFWS. The BiOp concluded that the Corps' current operations jeopardize the continued existence of the endangered pallid sturgeon, endangered interior least tern, and the threatened piping plover. The BiOp included a Reasonable and Prudent Alternative (RPA) to preclude jeopardy to these species. The RPA included a prescribed plan for operation of the Mainstem Reservoir System, which the Corps was to consider as it developed its alternatives for the RDEIS. In January 2001, the USFWS asked the Corps to also analyze the effects of a plan with a spring rise greater than that included as part of the RPA.

In total, the Corps was asked to consider eight alternatives to the CWCP as it developed its alternatives for the RDEIS. Because the alternatives submitted by American Rivers and the MRNRC were essentially identical, a single alternative identified as the ARNRC alternative has been evaluated, reducing the number of alternatives considered to seven. Further, while the Mni Sose Intertribal Water Rights Coalition alternative identified important Tribal issues and requested additional studies, it did not contain specific operational

criteria. The number of alternatives modeled for comparison to the CWCP is, therefore, six. These six alternatives will be briefly described in this chapter to provide some background on the criteria contained in the alternatives and some rationale for recommending the alternatives for Corps consideration.

The Missouri River Master Manual Review and Update and this NEPA review are limited in scope to the Corps' operation of the Mainstem Reservoir System. Throughout the Missouri River Master Water Control Manual Review and Update Study (Study), many Missouri River issues have been raised that are beyond the scope of the Study but are important to basin Tribes and interests. Rather than discount issues that are beyond the scope of the Study, the Corps revisited many Missouri River issues in four categories. These categories include: (1) some related directly to the water control plan (operational criteria), (2) some that could lead to changes in water control decisions, (3) some indirectly related to the water control plan that must be resolved outside of the water control decision process, and (4) some that have essentially no direct relationship to the water control plan. Some guidelines will be provided in this chapter, as some of the issues will be classified into one of the four categories listed in this paragraph along with the rationale for this categorization.

Several issues raised in discussions and consultation with basin Tribes during the Study are not considered by the Corps to be within the scope of the Study. Nevertheless, the issues are very real and important to the Tribes. Because of the Corps' Tribal trust responsibilities, it is incumbent upon the Corps to provide viable processes outside of this review that lead to the resolution of non-operational Tribal issues. For this reason, a separate Tribal Appendix (Appendix A) has been included in this document. The Tribal Appendix discusses issues that are important to the Tribes, includes a record and history of the consultation process to date, and includes all Tribal comments to date. Inclusion of all Tribal comments is intended to eliminate the possibility of misinterpretation of important Tribal issues by the Corps. The Appendix, as well as the discussions of Tribal impacts in Chapters 5 and 7 of this document, is intended to provide easy reference for the Tribes.

4.2 SUMMARY OF ALTERNATIVES SUBMITTED FOR CORPS CONSIDERATION

Following the extensive Tribal and public coordination period after the release of the PRDEIS and as part of the subsequent coordination with the USFWS, six alternatives to the CWCP were submitted for Corps consideration as it developed alternatives for the RDEIS. These alternatives represent a variety of interests in the basin, and, consequently, have a variety of recommendations for Corps consideration. The seven entities submitting their proposals are the MLDDA, the MRBA, American Rivers, the MRNRC, the Mni Sose Intertribal Water Rights Coalition, the MODC, and the USFWS. This section of Chapter 4 describes the recommendations of each of these entities in considerable detail.

4.2.1 Mni Sose Intertribal Water Rights Coalition

Rather than submitting a plan with specific operating criteria, the Mni Sose Intertribal Water Rights Coalition expressed concerns (see September 13, 1999, Mni Sose Intertribal Water Rights Coalition document in Appendix A for details) about the information presented in the PRDEIS. This decision was based on several factors. First, the Mni Sose Intertribal Water Rights Coalition felt that Indian water rights had not been adequately addressed in the PRDEIS nor would they be taken adequately into account as the Corps worked with various basin groups to get feedback on potential recommendations for water control plans. Second, the Mni Sose Intertribal Water Rights Coalition expressed the concern that the Corps had inadequate data on which to identify a selected plan and to address the impacts on the Tribes as it completed the RDEIS. Finally, the PRDEIS did not identify any “plans to mitigate the impact of its operations on the Tribes, because of the disproportionate impacts of its operations on the Native American communities,” as required under the Executive Order on Environmental Justice.

An 18-month, \$2.276 million effort was outlined by the Mni Sose Intertribal Water Rights Coalition to complete the required surveys and analyses it recommended as necessary to make the Corps’ Master Manual EIS process meet the requirements expressed above. The Corps feels it has adequate data and analyses to complete the EIS process while fulfilling all of the requirements required by NEPA and the Executive Order on Environmental Justice. Based on this conclusion, the Corps elected not to undertake the effort outlined by the Mni Sose Intertribal Water Rights Coalition.

4.2.2 Missouri Levee and Drainage District Association

The MLDDA submitted a proposal that had the support of over 1,700 petitioners. The primary focus of the proposal was increased flood control storage through the “increase in the size of the annual operating pool.” An additional 2 MAF of flood control storage was requested, which would make the base of flood control 55.1 MAF instead of the CWCP level of 57.1 MAF. The MLDDA also indicated that efforts should be made “to do a better job of reducing the Gavins Point discharges when the lower Missouri River in the Nebraska City, Kansas City, Hermann or Washington area is high.” To reduce the effects of high river stages on interior drainage and seepwater, the MLDDA requested “that the river be lowered, when possible, for a week or so to permit the drainage pipes to release the water from these fields into the river.” The MLDDA also recommended that “all reservoir releases from Gavins Point should be made with knowledge of not only existing reservoir storage levels and predicted runoff but also all tributary inflows and expected 5-day rainfall forecasts.” Finally, the MLDDA supported “federal funding to develop and implement an improved network of stream gauges throughout the Missouri River basin.”

It is obvious that the MLDDA is focused on reducing flood, interior drainage, and high groundwater impacts on the farm fields along the lower portion of the Lower River. The MLDDA even requests that factors that have been identified by others not be considered by the Corps. It states that it is “opposed to raising the level of Lake Oahe” and “any plan to reduce flows to minimum flows from July 1 to November 1 or to provide no service (to navigation) during the month of November.” This latter concern addresses the potential for higher releases from Gavins Point at other times of the year to move water from flood control storage and the impact of the lower releases on navigation service during or after harvest, which is “critical for the agricultural community.” Any spring rise from May 1 to July 1” is also opposed. Finally, because of impacts to navigation, increased conservation during droughts is also opposed.

The primary change the MLDDA requests from the CWCP is to increase the amount of flood control storage by 2 MAF. From a modeling

4 ALTERNATIVES SUBMITTED TO THE CORPS FOR CONSIDERATION

standpoint, the MLDDA alternative was modeled with a lowering of the base of the annual flood control zone from 57.1 MAF to 55.1 MAF. Changing the nonnavigation summer service level from 9 kcfs to 18 kcfs was also included in the computer simulation of this alternative.

4.2.3 Missouri River Basin Association

Voting members of the MRBA include the MRBA directors from eight of the basin States and a representative of the Mni Sose Intertribal Water Rights Coalition. Participation of Federal agencies and other basin interests is considered ex-officio. All MRBA meetings are open to the public, and basin stakeholders frequently attend and participate. Following the publication of the PRDEIS, the MRBA held a basin-wide workshop in December 1998. The purpose of the MRBA workshop was to obtain input from basin stakeholders regarding the recommendations that the MRBA should submit to the Corps. Of the proposals submitted to the Corps after the release of the PRDEIS, one could conclude that the MRBA proposal was developed with the greatest diversity of stakeholders involved in the process.

The MRBA proposal can be broken down into four subheadings: flow management, environmental, Tribal, and other recommendations. Of these four categories, the first two address water control plan recommendations. The flow management recommendations focus on the conservation measures to be followed in 1-year and extended droughts. Some of the environmental recommendations address flow management for the basin's threatened and endangered species, and the remainder of these recommendations address mechanisms to make adaptations and oversee monitoring, evaluating, and modifying of the initial plan and any adaptations. To acknowledge past injustices and current needs of the Tribes, the MRBA made several Tribal recommendations. Finally, the "other" category addresses the need to address other basin stakeholder concerns.

Flow Management Recommendations

The MRBA made flow management recommendations for immediate inclusion into the water control plan. For navigation support during single and multiple drought years, the MRBA recommended navigation criteria that would result in more conservation than occurred in the 1987 to 1993 drought. The eight basin States met through the summer of 1999, and there was general agreement that the target level of storage should be

43 MAF, which is about 2 MAF higher than occurred at the lowest storage in the drought in January 1990.

Examination of options for meeting this storage level continued through early November 1999 as the Master Manual staff worked with members from the navigation industry to address concerns it had expressed in August 1999. Basically, the navigation towing companies indicated that they would not be able to operate in the future if there were back-to-back minimum navigation service years. Ultimately, the MRBA adopted and recommended the navigation drought criteria that would result in a minimum storage level in the 1987 to 1993 drought of 43 MAF while eliminating back-to-back minimum service years.

The navigation criteria the MRBA recommended to the Corps consist of navigation trigger points (storage levels) on March 15 of 54.5 MAF of water in system storage and 59.0 MAF on July 1. If the amount of water in storage were at or below those levels on those dates, navigation service would be cut from full service level and an 8-month season. Instead, an intermediate service level 3 kcfs less than full service (and 3 kcfs more than minimum service) and a season length of 7.1 months (7 months and 3 days) would be followed. A second navigation criterion would be checked on July 1. If there were no storage gain between March 15 and July 1, navigation service would be further cut to minimum service (6 kcfs less than full service). The minimum service would be provided for the remainder of that 7.1-month season and for the period beginning on April 1 and ending on August 20 of the next season. The service level could not be increased to the intermediate level on July 1 of the second season because terns and plovers would still be located on islands in the Fort Randall and Gavins Point reaches until about August 20. This second, more stringent navigation criteria would occur primarily in the more severe drought years (about 8 years in the 100-year period modeled).

One other navigation criterion was included in the MRBA recommendation. To limit drawdown of the lakes during the more severe droughts (like the 1930 to 1941 drought), the MRBA specified a storage level that would preclude navigation service. If the amount of water in storage on March 15 is less than 31 MAF, there will be no navigation season that year. This criterion resulted in a minimum storage level of about

27 MAF in the simulation of the 1930 to 1941 drought, which is about 7 MAF higher than the CWCP (20-MAF minimum) would have provided.

The MRBA made a recommendation regarding movement of water in the period after the tern and plover nesting season ends and flows revert to navigation targets or evacuation targets. Releases up to 5 kcfs above the estimated evacuation service level were to be included in the water control plan to keep flows at St. Louis above a specified service level. This could be accomplished in years in which there was some evacuation of storage requirement in the fall that would be great enough to provide the needed water. Modeling of this alternative was based on system storage being at least 62 MAF on July 1, and the target flow at St. Louis was specified to be 90 kcfs.

The MRBA also expressed the need to better understand the potential for future depletions in the basin because they may have an impact on all project purposes for the Mainstem Reservoir System. A recommendation for the Corps to work with the basin States, Tribes, and other Federal agencies was included in the MRBA flow management recommendations.

Environmental Recommendations

The MRBA made two operational recommendations for immediate implementation to benefit environmental resources along the Missouri River mainstem. Two other operational recommendations are identified for consideration for implementation in the future under an adaptive management and consensus building approach. Finally, a mechanism is suggested in the form of a recovery committee to identify measures for implementation and to assist with the determination of whether implementation is feasible.

Unbalancing of the upper three lakes in the Mainstem Reservoir System was recommended for immediate implementation to benefit sport fisheries and associated recreation in these lakes and listed species (terns, plovers, and pallid sturgeon) in the two intervening open river reaches. This recommendation supports the unbalanced mode of operation that the Corps has been modeling the last 4 years, in which these lakes are drawn down the first year, held down the second year, and allowed to refill the third year on a 3-year cycle. Each of the three lakes would go through the cycle once every 3 years. Vegetation would grow around the rim of the lake during the second year, and it would be inundated the third year. Once inundated, the vegetation would provide spawning habitat and subsequent hiding habitat (from predators) for the young-of-year fish as they go through the larval and fry stages.

One form of flow enhancement for native river fish in general, and the pallid sturgeon in particular, was recommended for immediate implementation for the Lower River by the MRBA. To provide lower flows for another 25 days in some years, MRBA recommended that the evacuation of excess water be delayed from August 20 to September 15. This lower release (maximum release not to exceed that required for full navigation service) would keep flows lower to benefit the young-of-year native river fish. Some forms of Lower River recreation would also benefit from the lower flows. This measure was recommended in lieu of lower releases in the earlier part of the summer that would be lower than those required for full navigation service. This mode of operation was not included in the simulation run for the MRBA alternative. Instead, it was incorporated into a simulation run made at the request of the MDOC. This other simulation will be discussed later in this section. Comparison of the two alternatives—the MRBA and MODC alternatives—provides the reader the opportunity to understand potential impacts of this change in operation criteria.

As part of an adaptive management process, the MRBA recommended trial fish enhancement releases from Fort Peck Dam. The flows would be coordinated with the unbalancing of the upper three lakes such that the flow enhancement occurs about once every 3 years. The magnitude of the peak release would be 22 kcfs for a period of 2 weeks. There would be a period of about a week to ramp up to this flow and another week to ramp down. The increased releases would begin the first week of June and last about 30 days. Temperature enhancement during and subsequent to the increased releases would be required. The enhancement would be accomplished by passing a portion of the releases over the spillway. The trial releases would last for a period of 7 years, throughout which data would be acquired and analyzed to determine the success of the releases in recovering the pallid sturgeon and other native river species. Because this mode of operation was not recommended for immediate incorporation into the water control plan, it was not included in the simulation run of the MRBA alternative, but it was included in the MODC alternative.

Because of potential undesirable tradeoffs, the MRBA indicated it would work with Tribal, State, and Federal officials prior to implementation of the trial releases to address

4 ALTERNATIVES SUBMITTED TO THE CORPS FOR CONSIDERATION

these tradeoffs. It requested that flood and drought restraints be developed and an estimate of the cost to spill the water for the temperature enhancement be identified. Also, it requested that a strategy to address potential impacts to Tribal resources and various infrastructure developments be developed.

The MRBA recognized that adjustment of Gavins Point Dam releases to benefit native river fish and the terns and plovers was controversial. It recommended that a recovery committee investigate the benefits and adverse impacts of such releases on the environmental resources and economic uses of the Lower River.

In support of the environmental resources of the river reaches, the MRBA recommended habitat acquisition and enhancement. Acquisitions would be on a “willing seller” basis, and it was recommended that acquisition activities be coordinated. Three specific programs were identified: the BSNP Fish and Wildlife Mitigation Project, Section 514 of the Water Resources Development Act of 1999, and the U.S. Fish and Wildlife Service Refuge System. The MRBA also recommended that acquisition of off-channel habitat be explored.

Many of MRBA’s recommendations include the need for data acquisition. It, therefore, recommended “immediate funding and implementation of a basinwide biological and hydrologic monitoring program to improve overall river management and enhance the basin’s fish and wildlife habitat and species recovery.” In particular, MRBA recommended implementation of the Missouri River Environmental Assessment Program (MoREAP) developed by the Missouri River Natural Resources Committee. It also recommended implementation of the program by the U.S. Geological Survey-Biological Resources Division office in Columbia, Missouri.

To ensure that the science included in MoREAP is adequate and properly focused, MRBA also recommended an independent review of the science by the National Academy of Sciences. The MRBA recommended this review be “designed to determine the status of scientific understanding of the Missouri River” and to “identify areas where additional research of the river system is needed.”

Tribal Recommendations

The MRBA supported several measures relative to the Missouri basin Tribes. These include:

- Access to low-cost hydropower produced by the Mainstem Reservoir System,
- Assistance to identify and protect Tribal cultural resources,

- Adequate consultation with the Fort Peck Reservation Tribes regarding the Fort Peck flow enhancement and related impacts,
- Inclusion of Tribal considerations in the Master Manual RDEIS, and
- Continuing studies of the impacts of alternative water control plans on these Tribes.

Other Recommendations

Since 1994 the MRBA has been involved in addressing a multitude of issues related to the Missouri River and how it is operated. The MRBA published a document titled *Missouri River Planning Recommendations* in April 1998 that included “a variety of ideas designed to improve the basin’s overall economic and environmental conditions.” Input was provided to this effort by a variety of basin interests (stakeholders) from throughout the basin. MRBA will be working with the Corps, other Federal agencies, and Congress to implement many of these ideas over the next several years.

An additional idea surfaced late in MRBA’s efforts to make its recommendations to the Corps that was included in its “other” category. MRBA also recommended “exploring the development of a financial relief and/or incentive program for river interests impacted by operational changes brought on by extreme climatological conditions.”

4.2.4 American Rivers

American Rivers, in its own words, is “the Nation’s leading river conservation organization.” It, therefore, recommends an alternative that “provides the operational changes necessary for fish and wildlife” with summer flows lower than required to support navigation. Even though this alternative is “not a complete return to natural flows on the Missouri,” it does “mimic the frequency, timing, magnitude, and duration of the Missouri River’s hydrograph.”

American Rivers refers to its alternative as a “split navigation season alternative.” It has many more components than just a split navigation season. The alternative includes:

- Increased flows from Gavins Point for a 30-day period in the May 1 to June 15 timeframe (a spring rise). These increased flows should begin generally on May 15

and be stepped up for about a week to 15 kcfs over normal navigation service levels, held up for 2 weeks, and stepped down over the next week.

- Lower releases from Gavins Point after the spring rise with a target of an 18-kcfs water supply at Sioux City from July 1 until August 20. The flows would then be stepped up such that normal navigation targets would be in effect for the remainder of the navigation season.
- To ensure that the low flows would be maintained, flood control evacuation would not be allowed during July and August unless the water in storage is in the exclusive flood control zone.
- Higher navigation guide curves than in the CWCP would be required.
- The flows after August 31 should be as necessary to support navigation, water supply, flood control, and power production without negatively affecting fish and wildlife.

American Rivers also recommended test flows for native river fish and wildlife from Fort Peck Dam. Its recommendation included:

- Increased flows for a 30-day period once the temperature at the surface of Fort Peck Lake reaches 18 degrees C. The flows should be proportioned between the powerhouse and the spillway such that the temperature of the water in the river is 18 degrees C at Wolf Point, Montana. The total magnitude of the flows should be dependent on the runoff conditions, with average flows in the 11.5- to 24-kcfs range.
- At least 25 percent of the flow should be from the spillway to ensure meeting the target temperature of 18 degrees C.
- Downstream streambank erosion should be monitored before, during, and after the test releases to determine the effects on bank stability. Appropriate erosion control measures should be undertaken only where necessary to protect critical public infrastructure or where the flow modifications substantially affect private lands.

American Rivers supported the unbalancing of the upper three lakes. The recommendation “includes a two to three foot rise between April 15 and May 15 with levels held steady until June 15.” Furthermore, it stated that “The cycling period should be based on local hydrological conditions.”

American Rivers also had a recommendation for adaptive management that “includes the incorporation of river operations with State and federal monitoring and assessment programs.” It stated that “This is necessary

to monitor the effectiveness of operations like increased flows out of Ft. Peck and Gavins Point and to adjust the management tactics as necessary to meet fish and wildlife objectives as well as to reduce impacts on other river uses.” The recommendation goes on to emphasize that “this alternative must be adapted to yearly conditions in the basin....”

4.2.5 Missouri River Natural Resources Committee

The MRNRC is composed of representatives from seven State fish and wildlife management agencies along the mainstem river. These agencies have statutory responsibility for the management and stewardship of fish and wildlife resources. The MRNRC recommendations are in five different categories: integration of adaptive management, monitoring, and assessment into the Master Manual; Mainstem Reservoir System minimum storage levels in droughts and intrasystem regulation; test releases from two of the lakes; seasonal releases from the lakes; and minimum releases from the lakes.

Among the MRNRC’s recommendations is that “Incorporation of adaptive management, monitoring, and assessment into the Master Water Control Manual and Annual Operating Plan in order to ensure flexibility for management purposes is the MRNRC’s highest priority.” The recommendations state that these two processes “should be integrated and coordinated with existing and new State and federal river and reservoir monitoring and assessment programs”; however, the MRNRC does not identify any specific mechanism to accomplish this effort.

Minimum lake levels were specified for two types of droughts. In the less major droughts, like the 1954 to 1961 and the 1987 to 1993 droughts, levels corresponding to a total balanced storage level of 44 MAF were specified. In droughts like the more severe 1930 to 1941 drought, limiting of the years the total storage drops below 44 MAF should be minimized, and minimum storage in the lakes should not drop below levels corresponding to a balanced storage of 31 MAF. The MRNRC supports unbalancing the water in storage in the upper three lakes on a flexible basis “dependent on annual water supply conditions and storage levels in the individual reservoirs.” This unbalancing should not

unnecessarily occur entering a drought or during above normal runoff.

Test releases from Fort Peck and Gavins Point Dams are recommended by the MRNRC to “mimic the timing, magnitude, duration, and variability of the river’s natural annual hydrograph as much as possible” to restore the ecological river processes to benefit river fish and birds. The releases specified from Fort Peck are identical to those recommended by American Rivers. Releases from Gavins Point Dam are specified to be variable, depending on the anticipated annual runoff for each year. Three different magnitudes for the releases were specified, based on the relationship between the spring (May 1 to June 15 timeframe) and August river stages. In wetter years, a 3-foot higher stage in the spring was requested. The other two differences are 2.4 feet in normal years (between upper quartile and lower quartile runoff years) and 1.7 feet in drier years. Finally, releases to test the potential for sandbar building should be implemented periodically and monitored below Garrison, Fort Randall, and Gavins Point Dams. Releases of at least 50 kcfs for a minimum 4-week period are recommended by the MRNRC.

Summer, fall, and winter releases are recommended by the MRNRC from each of the dams. Steady-to-declining flows are recommended to protect eggs and young terns and plovers downstream from Fort Peck, Garrison, and Fort Randall Dams. In the case of Gavins Point Dam, releases should be maintained at an 18-kcfs target from June 15 to August 20. Unless Lakes Sakakawea and Oahe are in their exclusive flood storage zones, flood storage evacuation releases should be prohibited to limit the loss of rainbow smelt from these lakes in the August 20 to October 1 timeframe.

Minimum releases were also specified “below all projects to maintain viable fish and invertebrate populations that can repopulate the river when more suitable flows return.” These hourly minimum releases range from 4.5 kcfs at Fort Peck to 7.5 kcfs downstream from Garrison, Oahe, and Big Bend Dams to 9 kcfs downstream from Fort Randall and Gavins Point Dams. An additional minimum of 15 kcfs is specified for May 15 to June 15 downstream from Fort Randall Dam to maintain paddlefish spawning habitat in the Niobrara River confluence area.

4.2.6 Missouri Department of Conservation

As the MRBA was coordinating with the various stakeholders through formal conferences and its scheduled meetings of the directors or the technical subcommittee, individual States were holding discussions with stakeholders within their States. As one

of the many such meetings in the State of Missouri, the MODC met with the Missouri Department of Natural Resources (MODNR), whose director is also the MRBA director for Missouri. Discussions centered on what could be done to “enhance wildlife and recreation in the lower river, when practical and consistent with other project purposes.” The MODC recommended that the “Corps should reduce releases from August 1 to September 15 to full navigation service levels (41 kcfs at Kansas City).” Subsequent discussions with Missouri Governor Mel Carnahan, MODNR staff, and MODC staff clarified that the target during the August 1 to September 15 period should be full service at all navigation target locations, not just Kansas City. Another factor that needed to be considered was that the Corps’ normal operations under the CWCP during the August 1 to 20 timeframe was a flat release (modeled as 34.5 kcfs). Ultimately, there was agreement that the Corps would model the extension of the flat release until mid-September at Gavins Point Dam as a close approximation of this alternative, using the MRBA alternative as the base for the simulation run. As the RDEIS was being written and the impact analyses completed, it was discovered that this simulation run also had a spring rise at Fort Peck as a plan component. One can, therefore, compare data for this alternative with the data for an alternative referred to as the modified conservation plan, or the MCP alternative, in Chapter 7 of this RDEIS. Such a comparison will provide additional information on what happens when only the evacuation is delayed the additional period of time.

4.2.7 U.S. Fish and Wildlife Service

Section 7(a)(2) of the ESA states “all Federal agencies shall insure that any action authorized, funded, or carried out is not likely to jeopardize the survival or recovery of a listed species.” For well over a decade, the Corps and the USFWS had been engaged in both informal and formal Section 7 consultation relative to the Corps’ operation of the Missouri River Mainstem Reservoir System. In 1990 the USFWS prepared a Biological Opinion (BiOp) that concluded that current operations jeopardize the continued existence of the endangered interior least tern and the threatened piping plover. As a result of that BiOp, several measures, including operational changes possible within the flexibility of the

current Master Water Control Manual, were undertaken. The pallid sturgeon was not a listed species at the time of this consultation. In 1994 the USFWS prepared a Draft BiOp on the plan identified as the PA in the DEIS, which was released for public review in August 1994. This Draft BiOp concluded that the PA would jeopardize the continued existence of the tern and plover as well as the endangered pallid sturgeon. Because the PA was dropped from further consideration, the Draft BiOp was never completed.

In 1998 the USFWS and the Corps began informal consultation for three Corps Missouri River projects. These three projects were the operation of the Mainstem Reservoir System under the CWCP, the operation and maintenance of the Missouri River Bank Stabilization and Navigation Project on the lower 735 miles of the Lower River, and the operation of the Kansas River Reservoir System. When the Corps ended the period for basin interests to submit alternatives for consideration as the PA in November 1999, discussions were ongoing between the two agencies. The informal consultation discussions continued between the two agencies over the next 3 months to determine all of the changes that would be required of the Corps in a water control plan that would preclude jeopardy of listed species relying on the Missouri River. In the meantime, the Corps' NWD announced that a PA had been identified. This alternative had a spring rise component at Fort Peck Dam; however, it did not include a spring rise component followed by flows lower than those of the CWCP in the summer below Gavins Point Dam.

Informal discussions were terminated and formal consultation was initiated on March 30, 2000, in response to a March 28, 2000, letter from the USFWS to the Corps. The USFWS stated in this letter, among other things, "In our opinion, systems release or Gavins Point flow management is the key unresolved component of a comprehensive Missouri River package that is necessary to conserve listed species."

As the formal consultation period began, the USFWS began preparing its BiOp on the current operation of the three projects, summarizing the science associated with the listed species and the RPA "to avoid the likelihood of jeopardizing the three listed species." RPA elements included:

- Adaptive management
- Flow enhancement
- Unbalanced intrasystem regulation
- Habitat restoration/creation/acquisition

The flow enhancement element included recommendations for Gavins Point Dam releases and

Fort Peck Dam releases. A Gavins Point scenario was identified for consideration "as a starting point subject to review and modification based on the biological response of the listed species and appropriate recommended changes through the adaptive management process." The scenario included the following:

- "The Corps shall implement a spring flow from Gavins Point Dam of 17.5 kcfs (initial target) above full service navigation level and within a range of 15-20 kcfs on an average once every 3 years, as runoff conditions permit (roughly 33 percent of the years). Those increased flows shall occur for 30 consecutive days between May 1 and June 15."
- "Summer flows shall be decreased annually stair-stepping down from base current flows to an interim target of 25 kcfs by June 21, and held at 25 kcfs until July 15. On July 15, the flows shall be stair-stepped down to a flow of 21 kcfs until August 15. On August 15, flows shall be stair-stepped up to 25 kcfs and held there until September 1."

At Fort Peck Dam, "Initiation of higher discharge shall emulate the timing of the natural inflow into the lake and occur 2-3 days after the rising stage at Landusky, MT, gauge, but not before May 15 because of cold water temperatures. The peak discharge will range between 20 kcfs and 25 kcfs (approximately 19 kcfs from the spillway and 4 kcfs from the powerhouse) and persist for a minimum of 3 weeks. Warm-water releases should continue for at least 30 days."

These measures at Fort Peck Dam and Gavins Point Dam were modeled using the basic conservation measures included in the MRBA recommendation (and included in the January 2000 NWD PA, which would be revisited as the RDEIS was being prepared).

In January 2001, the USFWS also identified another alternative that it would like to have the Corps present in the RDEIS to provide some perspective for the alternative included in the BiOp RPA. This alternative was to be identical to the one in the RPA except that the Gavins Point Dam spring rise would be 30 kcfs over the navigation target.

4.3 SUMMARY OF MISSOURI RIVER ISSUES

Due to the size of the Missouri River, its diversity of uses, variety of resources and habitats, complexity of impacts, and many other factors, discussions on Missouri River operations bring many different issues to the forefront. There are many unrelated efforts being undertaken by a variety of agencies, the Tribes, special interest groups, and stakeholders to address these many and varied issues. During the conduct of the Study and the preparation of the various EISs, the Corps has been asked, at a minimum, to identify the issues that derive from the operation of the Mainstem Reservoir System and operation of the related Corps projects in the Missouri River basin. Furthermore, the Corps has been asked to discuss them in limited detail. To simply list all of the issues would be an unforgiving effort because for every issue that is listed, there is likely to be an issue that would be overlooked. To take the next step and discuss all the issues, even in limited detail, is well beyond the scope of this RDEIS. In fact, this RDEIS is addressing an extremely complex subject—alternative ways of operating the Mainstem Reservoir System and the impacts of the resulting changes on the uses and resources relying on the Missouri River; therefore, this RDEIS cannot go into the minute detail that would be required to address every impact, no matter how small or insignificant. Consequently, this section of this chapter will identify one way of categorizing these issues, provide some examples of issues that fit in each category, and identify where one would go to find more information on issues that are not discussed in this RDEIS.

4.3.1 Categorization of Missouri River Issues

Known issues that may have some relationship to the operation of the Mainstem Reservoir System or the projects making up the system can be listed into four separate categories. The first category includes all of the issues that have a direct effect on water control decisions. In other words, these issues concern operational criteria. Some issues could ultimately lead to changes in water control decisions, and these issues fall into the second category. Many issues are included in the third category, issues that are affected by

operation of the Mainstem Reservoir System but that must be addressed outside of the water control decision process. Finally, the fourth category includes those issues not directly affecting or affected by operational decisions.

Issues that fall into the first category of having a direct effect on water control decisions are all addressed in this RDEIS. For example, the distribution of system storage among the four storage zones is an issue that would fall into this category. Evacuation criteria for emptying the water stored in the flood storage zones also fall in this category. In general, many similar issues are outlined in Chapter 2 of this RDEIS.

Issues in the second category may lead to changes to the water control criteria identified in this RDEIS. For example, completion of the BiOp on listed species by the USFWS for the Mainstem Reservoir System under Section 7 of the ESA is an issue that falls into this category. Table 4.3-1 includes a partial listing of the issues that fall into this second category.

The third category of issues is those that fall in the category of being affected by Mainstem Reservoir System operations, with resolution of the issues falling under other authorities of the Corps, other Federal agencies, the States, and the Tribes. Many of the issues in this category were among those identified in MRBA's *Missouri River Planning Recommendations*, a document published in April 1998 after over 2 years of discussions among the MRBA directors and several workshops with Missouri River users throughout the basin. In the planning document's cover letter, the MRBA directors stated that they "will begin immediately to implement this consensus position of the basin by partnering with federal agencies and working closely with Congress." Recommendations for action fell under eight headings: navigation, recreation, fish and wildlife, agriculture and bank stabilization, water supply, flood control, hydropower, and economic development.

Table 4.3-1. Missouri River issues that may require water control management changes.

Section 7 Biological Opinion with Reasonable and Prudent Alternative
Aggradation and Degradation in the Lakes and River Reaches
Adaptive Management Measures
Recovery Program-Agency Coordination Team Decisions
Congressional Authorizations Relating to the Mainstem Reservoir System
Dam Safety Issues
Water Quality Issues

Examples of recommendations under the navigation heading that could be considered to belong in this third category of issues that fall under other Corps authorities include:

- “The Corps should conduct its operation and maintenance (O&M) activities on the navigation channel to provide environmental benefits and the economic returns that come with enhanced wildlife habitat in the river corridor. The Corps could use notched dikes, wing dike modifications, and other engineering solutions to protect and enhance an in-channel aquatic habitat. It should not do this at the expense of navigation or flood protection for private property along the river. Good communication and technology transfer between Corps division and district offices will help build upon existing successes in this area. Monitoring may be necessary to determine the effects of the engineering changes.”
- “To enhance safety and to prevent groundings, the Corps should work with the U.S. Coast Guard to mark the navigation channel with buoys in places where channel location is difficult for navigators to determine. The Corps should also repair and improve the structures that stabilize the river. Many of the river’s dikes, wing-dams, and closing structures are in disrepair. The Corps should use existing O&M money to improve structures while also improving the river’s wildlife habitat. To implement this recommendation, the Coast Guard should appoint a representative to meet with the small committee of barge operators. All concerns about safety and maintenance should be funneled through the committee. The Corps should inventory the number and type of safety and maintenance complaints it receives and better communicate its rationale for decisions about money spent on or withheld from safety and maintenance concerns. These channel improvements should be a high funding priority.”

Two examples of recommendations under the recreation heading that could be considered to belong in this third category of issues that fall under other Corps authorities include:

- “Congress should increase the Corps’ O&M budget for recreation and direct the Corps to

end its policy of no new recreation development on Corps properties in the Missouri River basin.”

- “The Corps and other State and federal agencies should standardize measurements of recreation use and benefits. To accomplish this, the Corps should convene a meeting with State and tribal representatives to compare measurements used by various States and tribes.”

The above examples for navigation and recreation demonstrate the basic factors for the issues falling into this third category. Both navigation and recreation are directly affected by Mainstem Reservoir System releases; however, there are issues under each of these two headings that must be addressed and resolved under other Corps authorities and working with other Federal, Tribal, and State agencies.

A fifth example of issues that fall into the third category will be described here to help the Tribes understand the Corps’ position regarding the quantification and perfection of their treaty water rights. At this time, the Corps has no authority to play a role in the water rights efforts of the basin Tribes. The Corps will manage the water that is in the Mainstem Reservoir System, and if a Tribe removes a portion of the water, the Corps just has less water to manage. Although the movement of water through the lakes as the Corps manages the total volume of water does not limit the water rights of the Tribes in any way, removal of water by a Tribe will likely affect how the Corps manages the total volume of remaining water. Information on the resulting impacts of the removal of water is presented in Chapter 7 of this RDEIS.

The fourth, and final, category of issues includes those that are not directly affected by Mainstem Reservoir System operations under the Master Manual. Some of these issues may be related to the projects the Corps operates along the mainstem; however, they are not directly affected by the movement of water from lake to lake and, ultimately, through the Lower River to the Mississippi River. Some of the MRBA recommendations in its April 1998 *Missouri River Planning Recommendations* fall into this category. Two examples of issues in this category but not included in the MRBA document are:

- The transfer of lands to the State of South Dakota and two Tribes in South Dakota—the

Cheyenne River Sioux Tribe and the Lower Brule Sioux Tribe—under Title VI of the 1999 Water Resources Development Act.

- The efforts of basin Tribes to have more mainstem hydropower allocated to their use.

Under the first example, the Corps role is limited to the ultimate transfer of some of the lands and recreational facilities that it currently manages. This transfer will happen no matter how the Mainstem Reservoir System is managed, and the transfer will not affect how the system is operated in

the future. In the second example, operation of the system in no way limits the allocation of hydropower to the Tribes. Appropriate action would need to be taken by Congress and, subsequently, the Western Area Power Administration (Western) to address this issue. The operation of the Mainstem Reservoir System affects the amount of hydropower generated, but it does not constrain how Western markets the power.